Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

RECENT LITERATURE.

Balfour's Comparative Embryology. Vol. ii, Vertebrates.[1]—After finding the first volume of this work so useful, accurate and suggestive, we were prepared to welcome the appearance of the second volume, which certainly fulfills the high expectations formed after reading and frequent reference to the first. Our anticipations are fully met, and the entire work for the first time places in the hands of the student a reliable and critical account of the general mode of development of members of each great class of the animal kingdom. The facts have been gathered and compiled from a great variety of sources, for the literature of embryology has multiplied excessively since 1860, the larger proportion of articles and memoirs having, indeed, been published within the last decade.

The first third of the volume is devoted to a general account of the development of each class above the Arthropods, with which the last volume closed—*i. e.*, the groups *Cephalochorda*, containing the single genus Amphioxus; the *Urochorda* or Tunicata, and the *Vertebrata*. This part of the volume contains a good deal of original matter contributed by the author and a few other embryologists, together with the most recent results of embryological studies, so that we will glance at some new points which meet one's eyes in the early pages.

The peculiarities in the development of the Teleostean egg, says Balfour, can best be understood by regarding it as an Elasmobranch egg very much reduced in size. "It seems, in fact, very probable that the Teleostei are in reality derived from a type of fish with a much larger ovum."

The lamprey is regarded as the type of a degenerated but primitive group of fishes, whose development, however, does not throw any light on its relationship. If so, we do not see why the author places it in his classification or phylogeny above so special and recent a group as the bony fishes. He then says that "the similarity of the mouth and other parts of Petromyzon to those of the tadpole probably indicates that there existed a common ancestral form for the Cyclostomata and Amphibia. Embryology does not, however, add anything to the anatomical evidence on this subject." On the other hand, he does not assent to Dohrn's view that the lampreys have descended from a relatively highly organized type of fish.

Had space been allowed we would like to have had fuller statements concerning the later stages of the lancelet, as well as of the ascidians. Concerning Myxine no reference is made to Steenstrup's paper, wherein the eggs are figured. Neither is a paper on Amphioxus in this journal (Jan. and Feb., 1880), by H. J. Rice, and containing new facts and drawings, noticed.

---

[1] *A Treatise on Comparative Embryology.* By Francis M. Balfour. In two volumes. Vol. ii. London, Macmillan & Co., 1881. 8vo, pp. 655. xxii.

We have in this work, for the first time in connected form, the comparative embryology of the Ganoids, the researches of Salensky on the sturgeon, and of A. Agassiz on the gar-pike, supplemented by those of the author, assisted by Professor W. K. Parker and his son, W. N. Parker, giving us a good idea of the development of two principal types. In the sturgeon the segmentation of the yolk is complete, but the embryo does not become folded off from the yolk in the manner usual in Vertebrates, while the relation of the yolk to the embryo is unlike that in any other known vertebrate. Before hatching the embryo has, to a small extent, become folded off from the yolk both anteriorly and posteriorly, and has also become, to some extent, vertically compressed. Owing to these changes, it resembles somewhat the embryo of a bony fish. According to Parker, in older larvæ a very rudimentary gill appears to be developed on the front walls of the spiracular cleft, while the gill-papillæ of the true branchial arches are of considerable length. There is a suctorial disk, with slender papillæ, which probably ultimately become the barbels, and a corresponding but temporary one arises in the gar-pike.

In the gar-pike, besides the discoveries, as respects the later stages, made by A. Agassiz, the segmentation is total; but the early stages of the embryo show a remarkable resemblance to those of bony fishes. Both the head and tail become early folded off from the yolk, as in bony fishes. The yolk in the gar forms a special external yolk sack, instead of an internal dilatation of part of the alimentary tract as in the sturgeon, and besides, in the gar it is placed behind instead of in front of the liver, as in the sturgeon. A knowledge of the mode of development of the Ganoids is, of course, most important, since from them the Amphibia are supposed to have been derived. But, as Balfour observes, there are no very prominent Amphibian characters in the development of either type, otherwise than a general similarity in the segmentation and formation of the germ-layers. So that no light is thrown by embryology on the origin of the Amphibia. In considering the development of the Amphibia a good deal of stress is laid on the resemblance between the mouths of the tadpole and the lamprey, and Balfour thinks that these are not merely the results of more or less similar habits. Says Balfour: "In dealing with the Ganoids and other types arguments have been adduced to show that there was a primitive vertebrate stock provided with a perioral suctorial disc; and of this stock the Cyclostomata are the degraded, but at the same time the nearest living, representatives. The resemblances between the tadpole and the lamprey are probably due to both of them being descended from this stock. The Ganoids, as we have seen, also show traces of a similar descent; and the resemblance between the larva of Dactylethra, the Old Red Sandstone Ganoids and Chimæra probably indicate that an extension of our knowledge will bring to light further affinities between the primitive Ganoid and Holocephalous stocks and the Amphibia."—*(To be continued.)*

GILL'S RECENT PROGRESS IN ZOOLOGY, FOR THE YEARS 1879 AND 1880.[1]—Few indeed of the numerous students of zoölogy in this country have time or opportunity even to glance at the work done each year by English-speaking naturalists, and still fewer are able to become acquainted with the work of foreign naturalists except through notices in scientific journals. To all, therefore, the present pamphlet, written as it is by one who by long study of the subject is well qualified to undertake such a work, will prove most valuable,

After noting that the prominent feature of zoölogical progress during the period reviewed has been the discovery of numerous deep-sea types, and criticising the ordinal classification of Fishes and Birds put forward by certain zoölogists, Dr. Gill proceeds to give a short separate account or abstract of papers containing discoveries of importance.

Among the subjects treated of are the following relating to invertebrates: Anal respiration; the effects of variously colored light upon the development of ova; the effects of starvation upon the human system, from the studies of surgeons during the late famine in India; the Pheodaria, a new group of Rhizopods allied to the Radiolaria, but constituted a class by Haeckel, who enumerates more than 2000 species; the discovery of medusæ in brackish and even in fresh water; a new order of Holothuroids (the *Elasmopoda*); a curious ophiuroid, with asteroid characters, found near Madagascar; the Orthonectids; *Polygordius* and its relationships; parasitic Planarians and Nemerteans; the relations of the Chætognaths and of *Peripatus*; the resemblance between the eyes of Limulus and of Trilobites; aborted development in decapod crustacea; *Scolopendrella*; the phosphorescence of glow-worms; the relations of the Polyzoa; the range in depth of living Brachiopods; worm-like mollusks (*Neomenia* and *Proneomenia*); the regeneration of parts in Gastropods; *Gastropteron;* recent Pleurotomariids; the dentition of the Marginellidæ; the relation of the arms and siphons of cephalopods to structures found in gastropods; and recently described North American Cephalopoda.

Among the vertebrates Dr. Gill, as might be expected both from the general direction of his own labors and from the extensive work performed upon our coasts by the Fish Commission, devotes most space to the Pisces. The principal works published upon this branch are noted, and mention made of the numerous workers who have described new species, anatomized known species, or discovered fossil forms. Then follow notices upon the origin of sounds produced by fishes; the functions of the airbladder; the temperature of fishes; the ovaries of teleosts; the

---

[1] *An Account of Recent Progress in Zoölogy, for the years 1879 and 1880.* By THEODORE GILL. From the Smithsonian Report for 1880.